# Meteor trails observed by the Sloan Digital Sky Survey

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Scientific observation of meteors is not simple because they have large angular size and random appearance in time and position on the sky. Bright meteors can be easily observed by naked eye or by video cameras in low resolution, but the luminosity distribution of meteors at their fainter end, the actual column diameter of the radiating zone, meteor fragmentation and the microstructure of lightcurves (especially when a meteor is detected through several color filters, as it happened in SDSS) is not well investigated. However, wide-field surveys, such as SDSS or the future LSST, with long time coverage over a significant fraction of sky might be helpful in collecting a scientifically relevant sample of low-brightness meteors. We used a custom designed Python script to detect linear features in SDSS images. The detection is performed in two steps: 1) we detect stars with Source Extractor [1] and blend them out; 2) we define a threshold so as to analyze 10000 points over the threshold; 3) we apply RANSAC [2] to detect points forming a line. We detected trails in over 15000 calibrated and sky-subtracted "frame" images in two filters so far. The drift scan in imaging survey mode of SDSS enables simple distinction between "apparently fast" meteors and other "slow" linear features caused by satellites and space debris, so that around 4000 frames could be eliminated as obvious satellites. Here we discuss the detection method, show some interesting preliminary results of the analysis of detected meteors, and discuss implications for other surveys.

**References:** [1] Bertin, E. & Arnouts, S. 1996: SExtractor: Software for source extraction, Astronomy & Astrophysics Supplement 317, 393. [2] Martin A. Fischler and Robert C. Bolles (June 1981). "Random Sample Consensus: A Paradigm for Model Fitting with Applications to Image Analysis and Automated Cartography". Comm. of the ACM 24 (6): 381–395